

Applicants: Young-Wook KIM et al.
Serial No.: 10/670,040
Filed: September 23, 2003
Page 2

Amendments to the Claims:

Please amend claims 1-2 and 4 and cancel claims 3, 5, 7-8, 11, and 13-14:

1. (Currently Amended) A method for fabricating a highly porous ceramic which has a high porosity of not less than 60% and a pore density of not less than 10^9 pores/cm³ from expandable microspheres and a preceramic polymer, comprising the steps of:

homogeneously mixing a preceramic polymer powder in an amount of 20% by weight or more, based on the total weight of the starting materials, expandable hollow microspheres in an amount of 20% by weight or more, based on the total weight of the starting materials and a ceramic powder in an amount of 50% by weight or less, based on the total weight of the starting materials, and molding the mixture to form a molded body;

heating the molded body to expand ~~it~~ the molded body and the expandable hollow microspheres at a temperature of 110~200°C, the temperature range between the softening point and melting point of the preceramic polymer;

curing the expanded molded body; and
pyrolyzing the cured molded body.

2. (Currently Amended) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 1, wherein the ceramic powder is at least one material selected from the group consisting of Al₂O₃, ZrO₂, MgO, ~~SiC~~, TiC, Si₃N₄, AlN, TiN, MoSi₂, WC and mixtures thereof.

3. (Canceled)

4. (Currently Amended)) A method for fabricating a highly porous ceramic which has a high porosity of not less than 60% and a pore density of not less than 10^9 pores/cm³ from expandable microspheres and a preceramic polymer, comprising the steps of:

homogeneously mixing a preceramic polymer powder in an amount of 20% by weight or more, based on the total weight of the starting materials and expandable hollow microspheres in an amount of 20% or more, based on the total weight of the starting materials, and molding the mixture to form a molded body;

heating the molded body to expand ~~it~~ the molded body and the expandable hollow microspheres at a temperature of 110~200°C, the temperature range between the softening point and melting point of the preceramic polymer;

curing the expanded molded body; and
pyrolyzing the cured molded body.

5. (Canceled)

6. (Previously Amended) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 1, wherein the preceramic polymer is at least one polymer selected from the group consisting of polycarbosilane, polysiloxane, polysilazane and mixtures thereof.

Applicants: Young-Wook KIM et al.
Serial No.: 10/670,040
Filed: September 23, 2003
Page 4

7. (Canceled)

8. (Canceled)

9. (Previously Amended) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 1, wherein upon heating the expandable hollow microspheres to 110~200°C at atmospheric pressure, the shell is softened and the inner medium is expanded to form spherical hollow spheres having an average diameter of 10-200 μm .

10. (Withdrawn) A highly porous ceramic fabricated from expandable microspheres and a preceramic polymer, in accordance with the method according to claim 1 wherein the highly porous ceramic has a high porosity of not less than 60% and a pore density of not less than 10^8 pores/cm³.

11. (Canceled)

12. (Previously Added) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 4, wherein the preceramic polymer is at least one polymer selected from the group consisting of polycarbosilane, polysiloxane, polysilazane and mixtures thereof.

13. (Canceled)

Applicants: Young-Wook KIM et al.

Serial No.: 10/670,040

Filed: September 23, 2003

Page 5

14. (Canceled)

15. (Previously Added) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 4, wherein upon heating the expandable hollow microspheres to 110~200°C at atmospheric pressure, the shell is softened and the inner medium is expanded to form spherical hollow spheres having an average diameter of 10-200 μm .

16. (Withdrawn) A highly porous ceramic fabricated from expandable microspheres and a preceramic polymer, in accordance with the method according to claim 4 wherein the highly porous ceramic has a high porosity of not less than 60% and a pore density of not less than 10^8 pores/cm³.